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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

TARAE, CATHERINE MICHELLE

ART UNIT	PAPER NUMBER
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3623

DATE MAILED: 06/27/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/394,514	Applicant(s) OGAWA ET AL.	
	Examiner C. Michelle Tarae	Art Unit 3623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 April 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3,4 and 6-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3,4 and 6-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input checked="" type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. <u>02222006</u> . |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____. | 6) <input type="checkbox"/> Other: _____. |

DETAILED ACTION

1. The following is a Final Office Action in response to the communication filed April 11, 2006. Claims 1 and 6 have been amended. Claim 13 has been added. Claims 1, 3, 4 and 6-13 are now pending in this application.

Response to Amendment

2. Applicant's amendments to claims 1 and 6 and addition of claim 13 are acknowledged.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 3, 4, 6-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over O'Connor et al. (U.S. 5,648,767).

As per claim 1, O'Connor et al. discloses an ETC (electronic toll collection) system comprising:

an antenna having a predetermined directivity for providing a limited radio-communication service zone that extends from the antenna and covers at least a portion of the area of a lane under the antenna, and which length is set to a distance which approximates a single vehicle (col. 2, lines 24-27; col. 3, lines 56-57; col. 4, line

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67-col. 5, line 6; col. 5, lines 55-67; Figure 4; Each antenna has an antenna pattern with a predetermined directivity that extends from the antenna and is directed at the area where a vehicle sensor (item 24 in Figure 4) is on the road. When a vehicle is detected (via the vehicle sensor 24 in Figure), the antenna arrays are able to tell the system whether the vehicle that caused the detection is equipped with a transponder because that vehicle must be within the antenna's communication zone sending a signal back to the antenna. Only one vehicle transponder is detected at a time as the antenna pattern directed along the road where the vehicle sensor is approximates a single vehicle. See the example in Figure 4, where the vehicle is shown on top of the vehicle sensor and at the same time being within the antenna pattern as indicated by the dotted lines leaving the antenna and reaching the vehicle.);

a single vehicle sensor positioned within said service zone at a location closer to oncoming vehicles than said antenna by a predetermined interval for detecting a vehicle which reaches a predetermined position in the limited radio-communication service zone, the predetermined position being defined by the location of the vehicle sensor such that only one vehicle is within said service zone and sensed by said vehicle sensor at any one time (col. 4, line 67-col. 5, line 1; col. 5, lines 38-56; col. 10, lines 40-45; item 24 in Figure 4; A vehicle detector is used to detect the presence of a vehicle. The vehicle detector is located closer to oncoming vehicles than the antenna. The vehicle sensor positioned within the service zone detects one vehicle at a time, which is supported in col. 5, lines 47-50 and col. 9, line 66-col. 10, line 1, which states that vehicles are processed one at a time as they enter the system.);

first means for continuously transmitting a radio signal via the antenna independently of whether or not the vehicle sensor detects the vehicle (col. 8, lines 45-47; The signals coming from the antennae transmit continuously at microsecond intervals independently of whether or not the vehicle detector detected the presence of a vehicle.);

second means for deciding whether or not a radio response from a vehicle to the radio signal is received via the antenna (col. 2, lines 27-37; The system contains a processing means for determining whether a radio response from a vehicle was received.);

third means for, in cases where the second means decides that a radio response to the radio signal is received, judging that there is an ETC vehicle coming into the limited radio-communication service zone in response to the detection of a vehicle by said sensor within said service zone (col. 5, lines 4-10 and 64-67; The system determines that a vehicle is transponder equipped if a radio response is detected in the radio-communication service zone is response to the presence of a vehicle being detected.); and

fourth means for, in cases where the vehicle sensor detects a vehicle while the second means decides that a radio response to the radio signal is not received, judging that there is a non-ETC vehicle coming into the limited radio-communication service zone (col. 5, lines 4-10; The system determines that a vehicle is "non-transponder" equipped if a radio response is not detected in the radio-communication service zone is response to the presence of a vehicle being detected.).

While O'Connor et al. does not expressly disclose a single vehicle sensor *within the entire system*, O'Connor does use a single vehicle sensor within the antenna service zone for detecting the presence of a vehicle within the service zone (col. 4, line 67-col. 5, line 1; col. 5, lines 38-40). Thus, the first vehicle sensor of O'Connor accomplishes the same result and is located in the same desired place as the single vehicle sensor of Applicant's invention. The second vehicle sensor of O'Connor et al. is called a clearing loop and detects a vehicle leaving the toll booth to clear the system, thereby being outside of the scope of applicant's claimed invention (col. 4, lines 45-50). Therefore, at the time of the invention it would have been obvious to one of ordinary skill in the art for the system of O'Connor et al. to omit the second vehicle sensor and its functions as the second vehicle sensor is not needed to detect the presence of a vehicle within the antenna service zone and ultimately determine if the vehicle is an ETC vehicle or not, and if it was not desired to detect a vehicle leaving the toll booth. Omission of an element and its functions is obvious if the function of the element is not desired. See MPEP 2144.04 II. *In re Larson*, 340 F.2d 965, 144 USPQ 347 (CCPA 1965)

As per claim 6, O'Connor et al. discloses an ETC (electronic toll collection) system, comprising:

an antenna having a predetermined directivity for providing a limited radio-communication service zone of which length is set to a distance which approximates a single vehicle (col. 3, lines 53-57; col. 4, line 67-col. 5, line 1; Figure 4; The system uses an antenna array that is directed at a vehicle detection area on a road. The size of the

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radio-communication service zone the antenna array creates on the vehicle detection area is about the size of a vehicle.);

a vehicle sensor positioned at a location within said service zone closer to oncoming vehicles than said antenna by a predetermined interval for detecting whether a vehicle has reached a predetermined position in said limited radio-communication service zone, the predetermined position being defined by the location of the vehicle sensor such that only one vehicle is within said service zone and sensed by said vehicle sensor at any one time (col. 4, line 67-col. 5, line 1; col. 5, lines 38-56; col. 10, lines 40-45; item 24 in Figure 4; A vehicle detector is used to detect the presence of a vehicle. The vehicle detector is located closer to oncoming vehicles than the antenna. The vehicle sensor positioned within the service zone detects one vehicle at a time, which is supported in col. 5, lines 47-50 and col. 9, line 66-col. 10, line 1, which states that vehicles are processed one at a time as they enter the system.);

transceiver means working cooperatively with said antenna for continuously transmitting a radio signal at a given rating level to cover the limited radio-communication service zone independently of whether or not the vehicle sensor within said radio-communication service zone detects a vehicle and for detecting a radio response to said radio signal from each vehicle detected by said vehicle sensor within said radio-communication service zone (col. 2, lines 27-37; col. 8, lines 45-47; The signals coming from the antennae transmit continuously at microsecond intervals independently of whether or not the vehicle detector detected the presence of a vehicle.

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A processing means determines whether or not a radio response from a vehicle was received.); and

processor means for deciding a vehicle that has been detected by said vehicle sensor in said radio-communication zone is a non-ETC vehicle if no radio response to said radio signal is detected from said vehicle (col. 5, lines 4-10; The system determines that a vehicle is "non-transponder" equipped if a radio response is not detected in the radio-communication service zone is response to the presence of a vehicle being detected.).

While O'Connor et al. does not expressly disclose a single vehicle sensor *within the entire system*, O'Connor does use a single vehicle sensor within the antenna service zone for detecting the presence of a vehicle within the service zone (col. 4, line 67-col. 5, line 1; col. 5, lines 38-40). Thus, the first vehicle sensor of O'Connor accomplishes the same result and is located in the same desired place as the single vehicle sensor of Applicant's invention. The second vehicle sensor of O'Connor et al. is called a clearing loop and detects a vehicle leaving the toll booth to clear the system (col. 4, lines 45-50). Therefore, at the time of the invention it would have been obvious to one of ordinary skill in the art for the system of O'Connor et al. to omit the second vehicle sensor and its functions as the second vehicle sensor is not needed to detect the presence of a vehicle within the antenna service zone and ultimately determine if the vehicle is an ETC vehicle or not, and if it was not desired to detect a vehicle leaving the toll booth. Omission of an element and its functions is obvious if the function of the

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element is not desired. See MPEP 2144.04 II. *In re Larson*, 340 F.2d 965, 144 USPQ 347 (CCPA 1965)

As per claim 7, O'Connor et al. discloses an ETC system as recited in claim 6, wherein said processor means decides a vehicle that has been detected by said vehicle sensor in said radio-communication zone is an ETC vehicle if a radio response to said radio signal is detected from said vehicle (col. 5, lines 4-10 and 64-67; The system determines that a vehicle is transponder equipped if a radio response is detected in the radio-communication service zone is response to the presence of a vehicle being detected.).

As per claim 8, O'Connor et al. discloses an ETC system as recited in claim 1, wherein the antenna is one in number (col. 10, lines 54-56).

As per claims 9 and 10, O'Connor et al. discloses an ETC system as recited in claims 1 and 6, wherein the antenna comprises a matrix array of antenna elements (col. 5, lines 51-64; col. 6, lines 5-17; Each antenna contains an array of antenna elements.).

As per claims 3, 4, 11 and 12, O'Connor et al. does not expressly disclose an ETC system as recited in claims 1, 3 and 6, wherein the limited radio-communication service zone has a length greater than a length of a standard vehicle and smaller than twice the length of said vehicle, or a length of about 6.5 m. However, O'Connor et al. does disclose that the length of the radio-communication service zone is arbitrary (col. 10, lines 40-45) and also provides exemplary embodiments as having the length of the radio-communication service zone as 5 m (col. 7, lines 40-41) and 2.5 m (col. 8, lines 20-21). Thus, establishing that the length of the radio-communication service zone is

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merely another way to ensure accuracy of the performance of the system, and is therefore, mere design choice. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to have the limited radio-communication service zone be of specified dimensions because doing so ensures that the toll radio signal is communicating with the appropriate vehicle at the appropriate location, thus providing accuracy of system performance, which O'Connor et al. has disclosed as a function of the length of the radio-communication service zone (col. 10, lines 43-45).

Claim 13 recites substantially similar subject matter as claims 1, 3, 4, 6-12 above. Therefore, claim 13 is rejected on the same basis as claims 1, 3, 4, 6-12 above.

Response to Arguments

5. Applicant's arguments regarding the new amendments have been addressed in the updated rejections provided above.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Sunahara et al. (U.S. 5,602,375) discusses an automatic debiting system suitable for free lane travel;
- O'Connor et al. (U.S. 5,227,803) discusses a transponder location and tracking system;
- Hassett et al. (U.S. 5,086,389) discusses an automatic toll processing apparatus.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to C. Michelle Tarae (formerly, C. Michelle Colon) whose telephone number is 571-272-6727. The examiner can normally be reached Monday – Friday from 8:30am to 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tariq Hafiz, can be reached at 571-272-6729.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



C. Michelle Tarae
Patent Examiner
Art Unit 3623

June 15, 2006